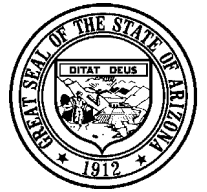


**ARIZONA DEPARTMENT OF WATER RESOURCES  
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**ARIZONA'S DAM SAFETY PROGRAM**

**JULY 2005**

## **RESPONSIBILITIES**

The Arizona Revised Statutes (A.R.S.) § 45-1201 assigns the responsibility for supervision of the safety of dams to the Director of the Arizona Department of Water Resources (Department). The Dam Safety Section's objective is to maximize the protection of the public against loss of life and property by reducing the likelihood of catastrophic failure of dams within the Department's jurisdiction. This goal is achieved by:

1. Maintaining a Dam Safety Section staffed by professional engineers and technical specialists trained and experienced in the design, construction, operation and maintenance of dams.
2. Inspecting and evaluating operating dams to determine if safety deficiencies exist and guiding and approving owner's actions to correct safety deficiencies.
3. Reviewing and approving applications required for proposed new dams, as well as enlargements, repairs, alterations and removal of existing dams.
4. Monitoring and approving the construction for new dams and the enlargements, repairs, alterations and removal for existing dams.

The statutory authority for the tasks performed within the Dam Safety Program is found in A.R.S. § 45-105 et seq. and 45-1201 et seq. Detailed rules for dam safety procedures are included in the Arizona Administrative Code, R12-15-1201 et seq., which was approved June 12, 2000. The rules were developed to facilitate and provide guidelines for the safe design, construction, operation, maintenance and removal of dams in jurisdiction.

## **JURISDICTIONAL DAMS**

The statutes and rules define a dam as an artificial barrier over 25 feet in height or capable of storing more than 50 acre-feet of water. Appurtenant works are included in jurisdiction. Exemptions exist for artificial barriers of small height or reservoir volume and for certain classifications of artificial barriers. Generally, dams owned and/or operated by the Federal government are exempt from State jurisdiction. Although dams which qualify as release-contained barriers are exempt, A.R.S. § 45-1202(E) gives the Director the right to conduct inspections to verify the release-contained barrier exemption.

Jurisdictional Dams in Arizona can generally be grouped in four categories:

### **Single-purpose (normally dry) flood control dams**

Flood control dams are usually operated and maintained by flood control and irrigation districts, water companies, cities, towns, and counties. Licenses of approval to operate these dams require they impound water only during and briefly following major storm events.

### **Permanent storage reservoirs with low-level outlet works**

Licenses of approval to operate recreational and water supply dams usually allow permanent storage up to the emergency spillway. The low-level outlet allows lowering the reservoir level in a controlled manner.

### Aboveground impoundments with controlled inflow

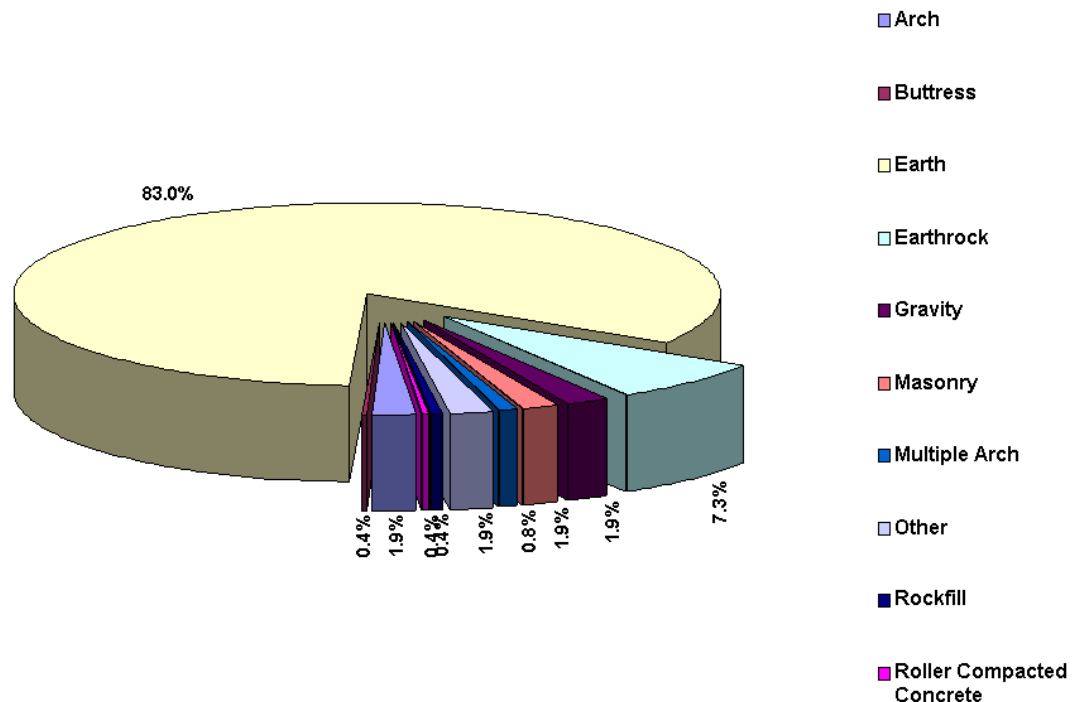
These structures consist of operated ponds related to mining, water treatment, or other industrial processes. Licenses of approval to operate these dams usually require minimum freeboard above the maximum operating level.

### Oversized stock reservoir without low-level outlet works

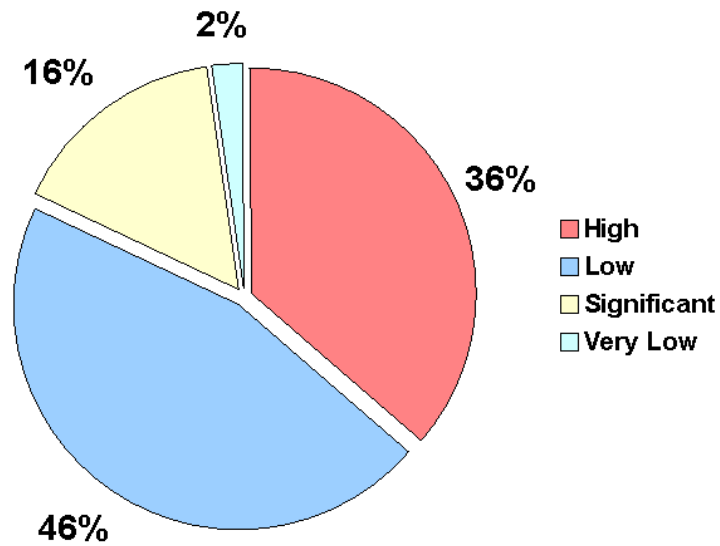
A “Stockpond” by definition has less than 15 acre-feet of storage and is exempt from jurisdiction. Some reservoirs created to provide water for livestock exceed this maximum storage. Licenses of approval to operate these dams usually allow permanent storage up to the emergency spillway. These dams are usually of small size and low hazard and located in remote areas.

Currently, there are approximately 260 dams within jurisdiction. The average dam is 35 feet high and stores approximately 2,040 acre-feet of water. City, County and State governments own approximately 125 dams. Private corporations and individuals own approximately 123 dams and public utilities own approximately 12 dams. Jurisdictional size dams located in Arizona, which are exempt from the Department’s jurisdiction, include approximately 65 Federal dams, 34 mineral mine tailing dams and 110 dams owned by Indian tribes.

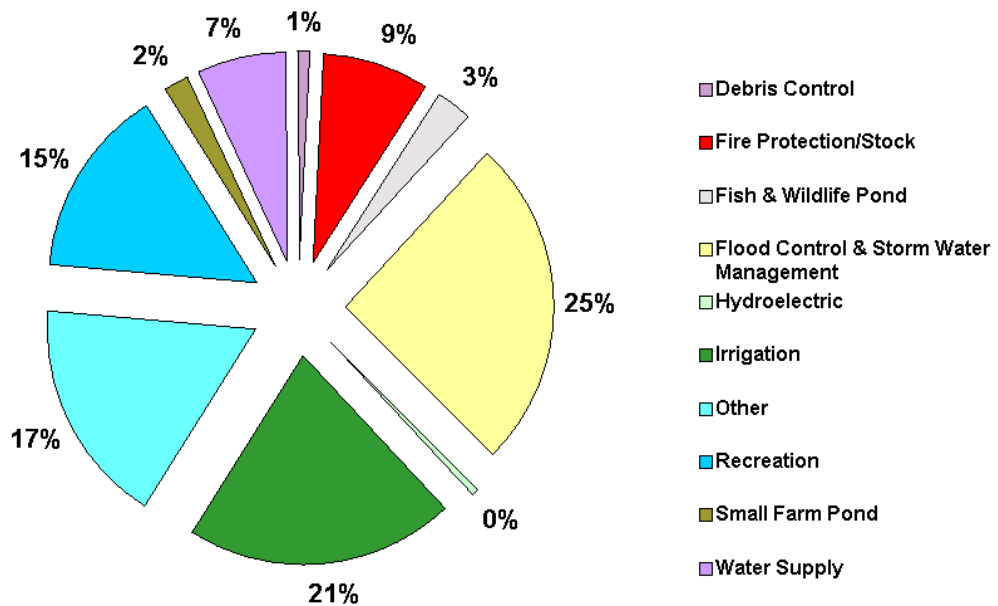
**Jurisdictional Dam Type Percentages**



**Hazard Class Percentages**



**Jurisdictional Dam Purposes**



## BACKGROUND

Arizona's Dam Safety Program has existed since 1929. Prior to 1971, funding for the Program was minimal and sporadic. Legislative approval of a consistent budget since 1971 has authorized permanent staffing and the development of a comprehensive Dam Safety Program. Arizona dam safety law includes the major areas suggested by the United States Committee on Large Dams and the National Dam Safety Program Act. The State has the authority to: (1) review, require modifications and approve plans to construct dams; (2) perform periodic inspections of construction; (3) issue licenses to operate; (4) investigate each dam at least every 5 years; (5) issue orders as needed to correct deficiencies; (6) adopt rules; and (7) require emergency action plans.

In 1998, the Legislature increased enforcement powers by providing for hearings and allowing civil penalties to be imposed. A person who violates Arizona dam safety law is guilty of a class 2 misdemeanor and each day constitutes a separate offense. The Director may assess a civil penalty in an amount not to exceed \$1000 per day of violation.

In 1988, the Legislature established a Dam Repair Fund designed to provide the Department the money necessary to initiate emergency actions associated with an imminent dam failure. Money expended by the Department on an emergency action is to be reimbursed by lien money recovered from the owner of the dam. The Director may also loan and/or grant money from the Fund to owners for repairs to dams classified as being in an unsafe, non-emergency condition due to severe safety deficiencies. Fees for applications and dam inspections are deposited into the Fund. In 1988, the Legislature provided \$2.5 million to the Fund for the repair of two unsafe dams. In 2005, the Arizona Game and Fish Commission transferred \$950,000 to the Fund towards emergency repairs of a dam.

## **MAJOR PROGRAM AREAS**

### **Unsafe Dams Rehabilitation**

The Dam Safety Program pursues and assists in rehabilitation or repair of dams classified as Unsafe due to having severe Safety Deficiencies. There are approximately twenty Unsafe Dams in the state. The Dam Safety Section uses a ranking system to prioritize our efforts towards repairs the highest risk dams in Arizona.

### **Inspection and Oversight of Existing Dams**

The Dam Safety Section reviews all engineering assessments and monitoring reports submitted for the nearly 260 Jurisdictional Dams. About 120 dams per year are due for inspection by Dam Safety Staff. Following each inspection, a written report is returned to the owner identifying Safety Deficiencies and making recommendations for needed maintenance work. The Dam Safety Section tracks identified Safety Deficiencies and works to assist dam owners in their resolution.

### **Applications to Construct, Enlarge, Alter, Repair, or Remove a Dam**

All plans to construct, enlarge, alter, repair, or remove a dam require review and approval through the Dam Safety Section. All applicants should meet with Dam Safety Section Staff prior to submittal to discuss Department requirements and resolve major design issues during preliminary stages of design. The Dam Safety Section performs Administrative and Substantive Reviews of each application.

### **Construction Monitoring**

The Dam Safety Section performs monitoring of construction to verify approved drawings, specifications, and quality assurance procedures are adhered to. Conditions of Approval of the Applications usually require Department inspection and formal approvals of dam foundations and other critical construction features.

### **Emergency Action Plans (EAPs)**

Primarily, Emergency Action Plans define: (1) the dam owner's requirements to observe his dam for emergency conditions, (2) responsibilities for notifying a pre-determined list of Emergency Responders, and (3) a description of the downstream areas potentially affected. The Department is serious in its commitment to ensure that all significant and high hazard dams in the State of Arizona have effective Emergency Action Plans for protection of the public against loss of life and property. Lack of an EAP is considered a Safety Deficiency. The Dam Safety Section developed a Fill-in-the-Blank EAP Form to minimize the time and expense required by dam owners. Dam Safety Staff assist owners in completing the form.

### **Unregistered Dams**

Occasionally, the existence of a previously unregistered dam is brought to the attention of the Dam Safety Section. In these cases, Dam Safety Staff perform a site visit to establish jurisdictional status and hazard classification. Owners of low hazard unregistered dams are usually issued permission to operate the dam. Owners of high and significant hazard unregistered dams are required to demonstrate the safety of the dam prior to receiving permission to operate. The Dam Safety Section has assisted several owners in removal of small, unwanted high and significant hazard dams using grants or loans from the Dam Repair Fund.

### **Special Projects**

The Dam Safety Section works on or commissions Special Projects to reduce risk at Unsafe Dams, improve program effectiveness and efficiency, and at the request of the Director.

*If you have any questions regarding Arizona's Dam Safety Program, please contact the Office of Dam Safety and Flood Mitigation at (602) 417-2445.*